



## The Forgotten Science of Distillation Control

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Start	<b>551693 The Forgotten Science of Distillation Control</b>
At-A-Glance	<b>Monday, April 1, 2019: 11:20 AM</b> Jackson (Hilton New Orleans Riverside)
Browse by Day	<b>Michael A. Taube</b> , S&D Consulting LLC, Houston, TX and Isuru A. Udugama, PROSYS, Technical Univeristy of Denmark, Kgs. Lyngby, Denmark
Browse by Topics	Distillation is the heart of all refining and petrochemical plants, as it determines the ability of a plant to generate on-specification product(s). In spite of the vast body of fundamental research and practical design experience within the industry, the design and tuning of the regulatory controls, which plays a pivotal role in achieving on-specification production, became and remains largely a lost and dying art. This is evidenced by the author's experience across multiple sites and companies wherein similar, if not identical, controls design and control-ability issues were discovered and rectified on and around distillation units, as well as by the precipitous drop in attendance of control-related sessions at industrial and academic conferences. Historically, there was a great amount of attention given to the design and performance of the regulatory and advanced regulatory controls (ARC) implemented on distillation units. As more advanced technologies came into common use, less attention was given to the underlying regulatory control structures, in spite of the fact that it provides the foundation upon which the new technologies rely. IN parallel to the shift in technology usage, the past decades have seen fundamental changes in the modus operandi of refineries: the design and operations resemble that of chemical plants. This was primarily the result of end-user quality programs that propagated more stringent product specifications "upstream" in the supply chain. Despite the changes to the operational criteria these tighter specifications created, refinery designers have effectively maintained the historical "status quo", especially regarding controls design. With these technological and historical aspects in mind, this paper presents fundamental and practical guidelines for designing robust and reliable control structures on these vital units. The authors draw

guidelines for designing robust and reliable control structures on these vital units. The authors draw

from 30 years of experience in process and controls design, and tuning such controls, on multiple units

across a wide array of refining, petrochemical and LPG/LNG plants. In addition to the guidelines, a sampling of real-world situations and the solutions for same will be presented to illustrate how the principles are practically implemented. Topics included in the presentation will include:

- Only Two “Handles” for Every Distillation Tower
- Accumulator Level Control Myths
- Relative Gain Analysis Made Easy
- “Closing the Loop” in Controls Design
- When Tray Temperatures act like Levels
- Flooded Condenser Design: Keep it Simple!
- APC: Love it, Hate it, Need it?

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**Extended Abstract:** File Not Uploaded

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See more of this Session: [Kister Distillation Symposium 2019: Honoring the Contributions of Greg Shinskey: A Jubilee of Advances in Distillation Control](#)  
See more of this Group/Topical: [Topical 8: Kister Distillation Symposium](#)

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